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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO.      |
|---|-------------|----------------------|---------------------|-----------------------|
| 10/849,196  | 05/20/2004  | Fujio Ito            | 501.43736X00        | 7289                  |
| 20457   | 7590        | 12/30/2005           | EXAMINER            |                       |
| ANTONELLI, TERRY, STOUT & KRAUS, LLP<br>1300 NORTH SEVENTEENTH STREET<br>SUITE 1800<br>ARLINGTON, VA 22209-3873 |             |                      |                     | GEBREMARIAM, SAMUEL A |
| ART UNIT  |             | PAPER NUMBER         |                     |                       |
|   |             | 2811                 |                     |                       |

DATE MAILED: 12/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |
|------------------------------|------------------------|---------------------|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |
|                              | 10/849,196             | ITO ET AL.          |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |
|                              | Samuel A. Gebremariam  | 2811                |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 06 September 2005.

2a) This action is FINAL.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 20-26 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 20-26 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_

5) Notice of Informal Patent Application (PTO-152)

6) Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. Claim 23 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification has support for a spacer structure that is partially exposed from an upper surface of the resin sealing, but the specification does not have support for a base that is exposed from the resin sealing member as recited claim 23.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 20-22 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mihara et al., US patent No. 6,781,223 in view of Lee et al. US patent No. 6,927,483.

Regarding claim 20, Mihara teaches (figs. 1 and 2) a semiconductor device comprising; a semiconductor chip (1) having over a main surface thereof an integrated circuit and plural electrodes (refer to fig. 1); plural leads (3,6) arranged around the semiconductor chip (1); plural wires (8) for connecting the plural electrodes (fig. 1) on

the semiconductor chip (1) with the plural leads (3,6), and a resin sealing member (9) for sealing the semiconductor chip (1), portions of the plural leads (3,6) and the plural wires (8); wherein the plural leads having plural first leads (3) includes first terminal portions (4) respectively and plural second leads (6) includes second terminal portions (7) respectively, the plural second leads (6) each being disposed between adjacent ones of the first leads (3), wherein end portions on one side of each of the plural first leads are positioned outside the semiconductor chip (1, refer to fig. 1); wherein end portions on one side of each of the plural second leads (6) are fixed to a back surface of the semiconductor chip (1); wherein the first terminal portions are arranged along side faces of the resin sealing member respectively (fig. 2).

Mihara does not explicitly show that the second terminal portions are arranged inside the first terminal portions respectively.

It is conventional and also taught by Lee to arrange terminal portion of leads (fig. 1A), wherein a plurality of first and second leads (120, 130) with terminal portion that are arranged along side faces of the a resin sealing member and the second terminal portions are arranged inside the first terminal portions respectively (refer to fig. 1A).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the arrangement of the terminal portions of the second leads taught by Lee in the structure of Mihara in order to form a semiconductor package with efficient lead placement (refer to the abstract).

Regarding claim 21, Mihara teaches substantially the entire claimed structure of claim 20 above except explicitly stating that the semiconductor chip is fixed to the end

portion on one side of each of the plural second leads through a base, which has a main surface and a back side.

However Lee teaches the use of a base structure (140, fig. 1A) where the semiconductor chip is situated (structure 140 has a main surface and a back side).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the arrangement taught by Lee in the structure of Mihara in order to form a semiconductor package with efficient lead placement.

Regarding claim 22, Mihara teaches substantially the entire claimed structure of claims 20 and 21 above including the end portions on one side of each of the plural second leads that are fixed to the backside of the base. The combined structure of Mihara and Lee would have the end portions on one side of each of the plural second leads that are fixed to the back-side of the base as claimed.

Regarding claim 24, the combined structure of Mihara and Lee teaches substantially the entire claimed structure of claim 20 above including the plural leads (3,6) each have a first portion (region indicated by 3 and 6), a second portion bent from the first portion to a back surface of the resin sealing member (regions 4 and 7 are bent) and a third portion extending from the second portion toward the side face of the resin sealing member (refer to fig. 1A of Lee, where 120 and 130 have bent portions toward the side face of the resin member).

Regarding claim 25, the combined structure of Mihara and Lee teaches substantially the entire claimed structure of claim 20 above including the semiconductor chip is fixed to the first portion (region where the device is fixed the leads); and wherein

the first terminal portions and the second terminal portions are formed in the third portion (regions that are exposed from the resin as shown in Lee, refer to figs. 1 and 2 of Mihara and fig. 1A of Lee).

Regarding claim 26, the combined structure of Mihara and Lee teaches substantially the entire claimed structure of claim 20 above including the plural leads (6 of Mihara) are fixed to the semiconductor chip through an adhesive (140 of Lee).

### ***Response to Arguments***

4. Applicant's arguments with respect to claims 20-26 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel A Gebremariam whose telephone number is (571) 272-1653. The examiner can normally be reached on 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SAG  
December 27, 2005

  
DONGHEE KANG  
PRIMARY EXAMINER